eicon networks

Diva Client for Windows

Reference Guide

www.eicon.com

Fourteenth Edition (January 2003) 203-076-14

Diva and Eicon are trademarks of Eicon Networks Corporation.

Microsoft, Windows, and Windows NT are registered trademarks of Microsoft Corporation.

All other brand and product names are trademarks or registered trademarks of their respective owners.

Changes are periodically made to the information herein; these changes will be incorporated into new editions of the publication. Eicon Networks may make improvements and/or changes in the products and/or programs described in this publication at any time.

If you want to make comments about the Eicon Networks Diva Client adapter you are using, address them by e-mail to: diva.client@eicon.com.

Eicon Networks may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligations to you.

Copyright©1999-2003 Eicon Networks Corporation. All rights reserved, including those to reproduce this publication or parts thereof in any form without permission in writing from Eicon Networks.

Contents

Introduction **5**

Diva Client for Windows Software 5

What is Diva Client for Windows 98/Me and 2000/XP? 6

How to proceed with the installation 6

System requirements 6

About This Guide **8**

How to use this online guide 8

Structure of this guide 8

Installing Diva Client for Windows 98/Me and 2000/XP **10**

Installing from downloaded files 10

Installing Diva Client for Windows 98/Me 10

Installing Diva Client for Windows 2000/XP 12

Installing virtual modems under Windows 98/Me and 2000/XP **15**

Installing the Eicon Analog FaxModem under Windows 98/Me 17

Installing the Eicon ISDN virtual modem under Windows 98/Me 17

Installing a virtual modem under Windows 2000/XP 17

Using your Diva Client adapter **19**

Dial-Up Networking 19

Fax applications 20

Using older Windows applications 20

About the Eicon ISDN virtual modem 21

AT-command set of the Diva Client for Windows virtual modems 22

Diagnostic and Security Tools **28**

Diva Call Log 28

Diva Diagnostic Log 30

Diva ISDN Monitor 30

Diva ISDN CallGuard 32

Call Bumping 37

Uninstalling Diva Client for Windows 39
Uninstalling Diva Client for Windows 98/Me 39
Uninstalling Diva Client for Windows 2000/XP 39

Troubleshooting 40
Using the Line Check utility 40
Identifying hardware conflicts under Windows Me 41
Resolving hardware conflicts under Windows Me 41
IPX access to CISCO routers 42
Using DiTrace 42
Analyzing traces 43
Advanced trace analysis 46
Suggested strategies to find ISDN problems in traces 49
Uninstalling the Diva software with Diclean 50
Uninstalling the Diva software with Undiva 51

Features 52

Getting Help 55

Glossary of ISDN Terms 56

CHAPTER 1

Introduction

This chapter describes the Diva Client for Windows 98/Me and 2000/XP software as follows:

- Diva Client for Windows Software below
- What is Diva Client for Windows 98/Me and 2000/XP? on page 6
- How to proceed with the installation on page 6
- System requirements on page 6

Diva Client for Windows Software

The Diva™ Client for Windows software enables you to use Diva Client adapters with the Windows 98, Windows Millennium Edition (Me), Windows 2000, and Windows XP operating systems. It tightly integrates the Windows environment with ISDN communications, giving you access to information residing on remote LAN servers, corporate hosts, and online information services, regardless of location.

The Diva Client for Windows 98/Me software provides:

- Fax capability
- Compliance with CAPI 2.0
- The Eicon WAN Miniport (for remote LAN access)
- COM Port (for installation of virtual modems)

It is compatible with any of the Diva client adapters listed below.

Desktop products	Notebook products
Diva USB	Diva USB
Diva 2.0x	Diva Pro PC Card
Diva Pro 2.0	Diva Pro 3.0 PC Card
Diva Pro 3.0	

What is Diva Client for Windows 98/Me and 2000/XP?

The Diva Client for Windows 98/Me and 2000/XP software provides full support for all Diva Client adapters under Windows 98/Me and 2000/XP, as follows:

- Adds support for CAPI-based applications
- Adds Diva Line Check utility (this utility allows you to verify your Diva software installation, and check your connection to the ISDN)
- Adds Diva Monitor Tool (this tool is useful for determining the status of a connection)
- Adds AFAX2 test utility (this utility is useful for troubleshooting)
- Adds ACOPY2 CAPI test utility (this utility is useful for troubleshooting)
- Adds Diva Assistant (a suite of tools to maximise control over your ISDN connection)
- Adds virtual modems (see note below) for ISDN communications, such as X.75, analog modem (V.34, 33.6 kbps), and fax modem.

Note: When installing a Diva Pro adapter under Windows 2000/XP the Eicon ISDN Analog Modem, the Eicon ISDN Fax Modem, and the Eicon ISDN V.120 Modem are installed by default.
When installing a Diva 2.0x or a Diva USB under Windows 2000/XP the Eicon ISDN V.120 Modem and the Eicon ISDN Analog FaxModem are installed by default. If you wish to install other virtual modems under 2000/XP, please refer to: Installing a virtual modem under Windows 2000/XP on page 17.

How to proceed with the installation

- Install your Diva Client adapter as described in the printed Diva Client QuickStart Guide included with your Diva Client adapter.
- Install the software as described in this Reference Guide.

System requirements

To install the Diva Client for Windows 98/Me and 2000/XP software, you must have:

- A Diva Client adapter (see the table on page 5 for the list of supported adapters)
- Microsoft Windows 98, Windows Me, Windows 2000, or Windows XP
- At least 4 MB of available hard-disk space
- An ISDN line with 64 or 56 kbps support

- An NT1 with S/T-Interface

Note: (North America and Japan only) If the Diva Client adapter you purchased does not have a built-in NT1 (a network terminator), it must be plugged into an external NT1. If you purchased your Diva Client adapter without a bundled NT1, it must be purchase separately, either from your Eicon Networks supplier or a third-party supplier.

CHAPTER 2

About This Guide

This guide provides a detailed description of how to install Diva Client for Windows, how to troubleshoot your ISDN connection, and how to use your Diva client adapter with popular third-party applications.

This chapter describes how to use this online guide as follows:

- How to use this online guide below
- Structure of this guide below

How to use this online guide

- To view a specific section, click the corresponding bookmark located on the left.
- To view a topic that contains further information, click the corresponding blue underlined phrase.

Structure of this guide

The guide is structured as follows:

Chapter	Contents
Introduction	Describes the Diva Client for Windows 98/Me and 2000/XP software.
About This Guide	The section you are reading now describes how to use this online guide.
Installing Diva Client for Windows 98/Me and 2000/XP	Describes how to install Diva Client for Windows 98/Me and 2000/XP and how to upgrade the automatically installed drivers with the latest Eicon software for Windows98/Me 2000/XP.
Installing virtual modems under Windows 98/Me and 2000/XP	Describes how to install several virtual modems that allow you to use your Diva Client adapter for a variety of applications other than Internet access (for example fax, analog and X.75).
Using your Diva Client adapter	Describes how to install the Diva Client for Windows 98/Me and 2000/XP to provide ISDN support for common Windows 98/Me/2000/XP applications.
Diagnostic and Security Tools	Describes how to configurate the Diva Client for Windows 98/Me and 2000/XP diagnostic and security tools.

Chapter	**Contents**
Uninstalling Diva Client for Windows	Describes how to remove the Diva Client for Windows software from your computer.
Troubleshooting	Identifies common reasons why your connection is not working correctly and describes procedures which you can follow to resolve these issues.
Features	Gives an overview of the functions provided by all Diva Client adapters.
Getting Help	Provides information on where you can obtain technical support for your Diva Client adapter.
Glossary of ISDN Terms	Explains common ISDN terms.

Important: For instructions on how to install your Diva Client adapter and the Diva Client for Windows software, consult the printed Diva Client QuickStart Guide included with your Diva Client adapter.

CHAPTER 3

Installing Diva Client for Windows 98/Me and 2000/XP

This chapter describes how to install the software under Windows 98/Me and 2000/XP as follows:

- Installing from downloaded files below
- Installing Diva Client for Windows 98/Me below
- Installing Diva Client for Windows 2000/XP on page 12

Before you start the software installation, your Diva Client adapter must have already been installed in your computer. Refer to the printed Diva Client QuickStart guide that came with your Diva Client adapter for more information.

Note: Installation of your Diva Client adapter may require access to the original Windows 98/Me or 2000/XP CD-ROM. Make sure the original Windows 98/Me or 2000/XP CD-ROM is accessible during installation.

Installing from downloaded files

In this guide, instructions for software installation always refer to installation from CD-ROM. It is assumed that your CD-ROM drive letter is D:.

If you have downloaded updated software for Diva Client for Windows from the Eicon Networks Web site, you can copy the files into one directory on your hard-disk drive and install the files from there.

If you have downloaded updated software, simply change the letter of the drive and the path accordingly during installation.

Installing Diva Client for Windows 98/Me

Diva Client for Windows 98/Me can be configured with the Diva Client for Windows Setup Wizard. The Setup Wizard lets you select and configure the ISDN options you need.

The Setup Wizard helps you to quickly and easily install and configure most aspects of Diva Client for Windows. The Setup Wizard can be used to change any of your installation and setup options.

After you have installed your Diva Client adapter and connected your ISDN line, turn on your computer. Windows 98/Me detects the new hardware. The procedure depends on which dialog box appears on your screen, either case 1 or case 2.

Note: If you are facing problems during the installation of Diva Client for Windows, remove it with the Diclean utility as described in Uninstalling the Diva software with Diclean on page 50, and reinstall Diva Client for Windows as described in this chapter.

Case 1

If Windows cannot install its own drivers, the ‘Add New Hardware Wizard’ appears. Click ‘Next’ and do the following:

If you are using Windows 98:

1. Select ‘Search for the best driver for your device (Recommended)’, and click ‘Next’.
2. Make sure ‘Specify a location’ is selected and all other options are deselected.

   In the edit field, type:

   `D:\win_9x\install`

   (where `D:` corresponds to your CD-ROM drive letter).
3. Insert the Diva Client Software Suite CD-ROM into your computer’s CD-ROM drive, and click ‘Next’.
4. Follow the on-screen instructions.
5. When prompted, restart your computer. After your computer restarts, the installation of the Diva Tools and the Diva Assistant begins.

If you are using Windows Me:

1. Select ‘Specify the location of the driver (Advanced)’ and click ‘Next’.
2. Select ‘Search for the best driver for your device (Recommended)’ and make sure ‘Specify a location’ is selected and all other options are deselected.

   In the edit field, type:

   `D:\win_9x\install`

   (where `D:` corresponds to your CD-ROM drive letter).
3. Insert the Diva Client Software Suite CD-ROM into your computer’s CD-ROM drive, and click ‘Next’.
4. Follow the on-screen instructions.
5. When prompted, restart your computer. After your computer restarts, the installation of the Diva tools and the Diva Assistant begins.

Case 2

If Windows installs its own drivers for your Diva Client adapter, the ‘ISDN Configuration’ wizard appears.

1. On the ‘ISDN Configuration’ wizard screen, click ‘Next’.
2. Enter the switch protocol your phone company or ISP (Internet Service Provider) uses and their telephone number(s) to complete the wizard.

   After you have completed the ‘ISDN Configuration’ wizard, you need to update the automatically installed drivers with the Diva Client for Windows software. The software provides functionality and additional tools that are not available with the drivers that are automatically installed by Windows.
3. Insert the Diva Client Software Suite CD-ROM into your computer’s CD-ROM drive.

   Click ‘Start > Run’ and in the open box type:

   `D:\win_9x\install\Update.bat`

   (where `D:` corresponds to your CD-ROM drive letter).
4. Follow the on-screen instructions.
5. When prompted, restart your computer. After your computer restarts, the installation of the Diva Tools and Diva Assistant begins.

Note: During installation, the ISDN switch type is set to ‘DSS1: Euro-ISDN’.

Installing Diva Client for Windows 2000/XP

Note: You must be logged on with administrator rights.

Note: If you are facing problems during the installation of Diva Client for Windows, remove it with the Undiva utility as described in Uninstalling the Diva software with Undiva on page 51, and reinstall Diva Client for Windows as described in this chapter.

Install the Microsoft Windows 2000/XP ISDN drivers

After you have installed your Diva Client adapter and connected your ISDN line, turn on your computer. Windows 2000/XP detects the new hardware.

The procedure depends on which dialog box appears on your screen, either case 1 or case 2.

Case 1

If Windows 2000/XP cannot install its own drivers for your Diva Client adapterClient adapter, the ‘Found New Hardware Wizard’ appears.

1. On the ‘Found New Hardware Wizard’ screen, click ‘Next’.
2. On the ‘Install Hardware Device Drivers’ screen click ‘Search for a suitable driver for my device (Recommended)’, then click ‘Next’.
3. On the ‘Locate Driver Files’ screen make sure that only the ‘Specify a location’ option is selected and all other options are deselected, then click ‘Next’.
4. Insert the Diva Client Software Suite CD-ROM into your computer’s CD-ROM drive and enter the following location:

   `D:\WIN_2K\INSTALL`

   (where `D:`corresponds to your CD-ROM drive letter), and click ‘Next’.
5. Click ‘Next’.

   After the drivers are upgraded, the installation of the Diva Tools begins.
6. When prompted, restart your computer. After your computer restarts, the installation of Diva Tools is completed and Diva Assistant is installed.

Case 2

1. If Windows 2000/XP automatically installs its own drivers, the ‘ISDN Configuration’ wizard appears.
2. Click ‘Next’. Enter the switch protocol your phone company or ISP (Internet Service Provider) uses and its telephone number(s) to complete the wizard.

After you have completed the ‘ISDN Configuration’ wizard, you need to update the automatically installed drivers with the Diva Client for Windows software. The software provides functionality and additional tools that are not available with the drivers that are automatically installed by Windows.

To Update the Diva Client Software Drivers

1. Insert the Diva Client Software Suite CD-ROM into your CD-ROM drive. The Diva Client Software Suite Welcome screen should appear automatically.

   If the Welcome screen does not appear, click ‘Start > Run’. In the ‘Run’ dialog box, type `D:\cdsetup.EXE` (where `D:` corresponds to your CD-ROM drive letter).
2. From the Diva Client Software Suite Welcome screen select your language.
3. Click ‘Installation’.
4. Click ‘Update Diva Software for Windows 2000/XP’.

5. The ‘Diva Client for Windows 2000/XP’ wizard appears and displays information about the currently installed version (which was installed automatically), and the new version of the software.

6. In the ‘Diva Client for Windows 2000/XP’ wizard, click ‘Start’.

Note: If the ‘Start’ button is not available, then the software on the CD-ROM is the same version as or older than the automatically installed software. If this is the case, you can skip the rest of this procedure.

7. Restart your computer when prompted.

CHAPTER 4

Installing virtual modems under Windows 98/Me and 2000/XP

Diva Client for Windows 98/Me and 2000/XP provides several virtual modems that allow you to use your Diva Client adapter for a variety of applications other than Internet access (such as fax, analog and X.75). This chapter describes how to install virtual modems as follows:

- Installing the Eicon Analog FaxModem under Windows 98/Me on page 17
- Installing the Eicon ISDN virtual modem under Windows 98/Me on page 17
- Installing a virtual modem under Windows 2000/XP on page 17

You can install one or more of the following virtual modems:

Under Windows 98/Me:

Modem	Description
Eicon Analog FaxModem[2)]	Softmodem/Softfax
Eicon RNA Modem	Use this modem, in conjunction with certain PPP applications, to connect to the Internet or to a corporate intranet router.
Eicon X.75 Modem[1)]	Use this modem to connect to certain connectivities.
Eicon V.120 Modem[1)]	Use this modem to connect to certain connectivities.
Eicon BTX Modem	Use this modem in conjunction with banking applications in Germany, such as Amaris or Microsoft Money.
Eicon Port	Use this modem for port emulations.
Eicon ISDN Analog Modem[3)]	Use this modem for analog data communications to regular (non-digital) modems, over the ISDN network.
Eicon ISDN Fax Modem[3)]	Use this modem, in conjunction with a third-party faxing software, to send and receive Group 3 faxes directly from your computer (not from a separate fax machine).

[1)] This modem is available for both 56 kbps or 64 kbps connections. When connecting to or calling from certain locations in North America, some switches do not support 64 kbps connections, and you must limit the speed to 56 kbps.
[2)] This modem is used as analog/fax modem for Diva USB and Diva 2.0x.
[3)] This modem can be used with Diva Pro adapters only.

Under Windows 2000/XP:

Modem	Description
Eicon ISDN Analog Modem3)5)	Use this modem for analog data communications to regular (non-digital) modems, over the ISDN network.
Eicon ISDN Digital Modem	Use this modem, in conjunction with certain PPP applications, to connect to the Internet or to a corporate intranet router.
Eicon ISDN BTX Modem	Use this modem, in conjunction with a third-party faxing software, to send and receive Group 3 faxes directly from your computer (not from a separate fax machine).
Eicon ISDN Fax Modem3)5)	Use this modem, in conjunction with a third-party faxing software, to send and receive Group 3 faxes directly from your computer (not from a separate fax machine).
Eicon ISDN Analog FaxModem2)4)	Softmodem/Softfax
Eicon ISDN V.110 Modem	Use this modem for low-speed connections over ISDN.
Eicon ISDN V.120 Modem 1)4)5)	Use this modem to connect to certain connectivities.
Eicon ISDN X.75 Modem1)	Use this modem to connect to certain connectivities.

1)This modem is available for both 56 kbps or 64 kbps connections. When connecting to or calling from certain locations in North America, some switches do not support 64 kbps connections, and you must limit the speed to 56 kbps.

2) This modem is used as analog/fax modem for Diva USB and Diva 2.0x.

3) This modem can be used with Diva Pro adapters only.

4) This modem is installed by default if you have installed a Diva 2.0x or a Diva USB.

5) This modem is installed by default if you have installed a Diva Pro adapter.

Installing the Eicon Analog FaxModem under Windows 98/Me

This procedure explains how to install the Eicon Analog FaxModem under Windows 98/Me. It is recommended for faxing within applications such as Microsoft Outlook.

1. Run the Diva Client for Windows Setup Wizard by clicking
   'Start > Programs > Diva > Setup Wizard'.
2. Click 'Start'.
3. Click 'Next' until you reach the 'Eicon Analog FaxModem' page.
4. Select 'Install this modem' and 'Allow incoming calls'.
5. Finish the installation, and restart your computer when prompted.

You will need to set the Eicon Analog FaxModem as the faxing device from within your applications. Refer to the third-party documentation for more information.

Installing the Eicon ISDN virtual modem under Windows 98/Me

This procedure explains how to install the Eicon virtual modem emulation under Windows 98/Me.

1. Run the Diva Client for Windows Setup Wizard by clicking
   'Start > Programs > Diva > Setup Wizard'.
2. Click 'Start'.
3. Click 'Next' until you reach the Eicon ISDN virtual modem page.
4. Select 'Install COM port for 16-bit applications'.
5. Choose the COM port. Usually, you can select any free COM port number.
6. Finish the installation, and restart your computer when prompted.

Installing a virtual modem under Windows 2000/XP

This procedure explains how to install a virtual modem under Windows 2000/XP.

1. Click 'Start > Settings > Control Panel > Phone and Modems Options'.
2. If you install a virtual modem for the first time the 'Location Information' screen will appear.
3. Insert the necessary information, then click 'OK'.
4. In the 'Phone and Modem Options' dialog box, click the 'Modems' tab.

   The 'Modems' screen shows already installed modems and the corresponding COM port.
5. Click 'Add'.

6. In the ‘Install New Modem’ dialog box, select ‘Don’t detect my modem; I will select it from a list.’
7. Click ‘Next’.
8. Select ‘Eicon Networks’ from the ‘Manufacturers’ dialog box and select the virtual modem you wish to install.
9. Click ‘Next’.
10. Select a port for your modem, then click ‘Next’.
11. When your modem is installed, click ‘Finish’.
12. The ‘Phone and Modem Options’ dialog box displays the virtual modem you installed. Click ‘OK’ to close the ‘Phone and Modem Options’ dialog box.

Note: After you install a virtual modem, simply select it from within the communications software that will be using the modem.

CHAPTER 5

Using your Diva Client adapter

Diva Client for Windows provides ISDN support for common Windows 98/Me/2000/XP applications such as:

- Dial-Up Networking below
- Fax applications on page 20: fax support is available on Diva Pro 2.0, Diva Pro 3.0, Diva 2.0x, and Diva Pro PC cards.
- Using older Windows applications on page 20: older 16-bit applications that were designed for Windows 3.x can be used with Diva Client for Windows by installing the Eicon ISDN virtual COM port option.

Dial-Up Networking

Windows 98/Me and 2000/XP includes a Dial-Up Networking facility that provides access to the Internet, Windows NT or Windows 2000 Remote Access Service (RAS), or other dial-up services. For information on how to install Dial-Up Networking, consult the Windows online help.

LAN protocols and Dial-Up Networking

The following are some of the LAN protocols that can be used over dial-up connections:

- TCP/IP (for Internet connections)
- IPX (often used for Microsoft networks or Novell NetWare)
- NetBEUI (used for Microsoft networks)

TCP/IP is installed automatically with the Diva Client for Windows software. IPX and NetBEUI are not installed automatically under Windows 98/Me and 2000/XP.

Point-to-Point Protocol (PPP) provides communications control (for example: dialing, establishing connections and disconnecting). Dial-up connections are used commonly for access to the Internet and Windows NT/Windows 2000/XP RAS.

If you do not have these protocols installed, and you require them, they can be installed by opening the Network icon (located in the Windows Control Panel). You will require your original Windows 98/Me and 2000/XP CD-ROM. Refer to the Windows 98/Me and 2000/XP online help for more information.

Fax applications

Almost all communications and fax applications can be configured to use your Diva client adapter. Depending on your fax application, you may need to have either Eicon ISDN CAPI 2.0 or the Eicon ISDN Fax Modem installed.

Eicon ISDN CAPI 2.0 for Windows 98/Me and 2000/XP

Eicon ISDN CAPI 2.0 is automatically installed when you install the Diva Client for Windows software. With it, you can send and receive faxes using a Diva Client adapter and a third-party faxing application that supports CAPI. You will need to enable CAPI from within your third-party application.

Eicon ISDN Fax Modem

The Diva Client for Windows 98/Me and 2000/XP software provides the Eicon ISDN Fax Modem as the appropriate TAPI Device for fax applications. It is recommended for faxing within applications such as Microsoft Outlook. You will need to set the Eicon ISDN Fax Modem as the faxing device from within your applications. Refer to the third-party documentation for more information.

The following Diva client adapters have Group 3 fax capabilities:

- Diva Pro 2.0
- Diva Pro 3.0
- Diva Pro PC Card
- Diva Pro 3.0 PC Card
- Diva 2.0x 1)
- Diva USB1)

1) This adapter uses the Eicon Analog FaxModem.

For instructions on how to install the Eicon Analog FaxModem under Windows 98/Me, refer to: Installing the Eicon Analog FaxModem under Windows 98/Me on page 17.

For instructions on how to install the Eicon ISDN Fax Modem under Windows 2000/XP, refer to: Installing a virtual modem under Windows 2000/XP on page 17

Using older Windows applications

Older applications that were designed for Windows 3.x can be used with Diva Client for Windows 98/Me and 2000/XP. If you are using older applications that require access to a COM port to operate you can use them with your Diva Client adapter.

About the Eicon ISDN virtual modem

The Diva Client for Windows 98/Me Setup Wizard provides an option called Eicon ISDN virtual modem. This port appears as a COM port to your 16-bit Windows applications, and it can provide the same functionality as the virtual modems. To use this ISDN port, you must instruct it with the appropriate AT-commands. See AT-command set of the Diva Client for Windows virtual modems on page 22 for more information about these commands.

Install the Eicon ISDN virtual modem

For instructions on how to install the Eicon ISDN virtual modem under Windows 98/Me, refer to:

- Installing the Eicon ISDN virtual modem under Windows 98/Me on page 17.

For instructions on how to install the Eicon ISDN virtual modem under Windows 2000/XP, refer to:

- Installing a virtual modem under Windows 2000/XP on page 17.

AT-command set of the Diva Client for Windows virtual modems

The Diva Client for Windows virtual modems supports the following AT command set (parameters enclosed in square brackets are optional, variables are enclosed in angle brackets) for Diva Pro only. These commands must be used from within your communications application.

Command	Description
`A/`	Repeats the previous command.
`AT`	No operation.
`AT A`	Answer - Has to be issued to accept an incoming call that has been indicated by a RING.
`AT D <Number>`	Dial - Dials the given <number> and switches to data mode after successful connection establishment.
`AT D <Number>;`	Dial - Dials the given <number> but remains in command mode when the connection has been established.
`AT DP <Number>`	Pulse Dialing - Dials according to the pulse code convention (is ignored with ISDN and treated as ATD).
`AT DT <Number>`	Tone Dialing - Dials according to the multiple frequency convention (is ignored with ISDN and treated as ATD).
`AT E [<n>]`	Echo Mode - In echo mode all commands sent to the modem are echoed back to the terminal. n > 0: Echo Mode ON n = 0: Echo Mode OFF
`AT H [<n>]`	Hangup - Disconnects the line. 0 < n < 3 is accepted for compatibility, but ignored by the driver.
`AT I [<n>]`	Info - Returns the modem identification string. <n> is ignored.
`+++`	Escape - Switches the modem back from the data mode to the command mode.
`AT O [<n>]`	Online - Switches the modem from the command mode to the data mode. 0 < n < 2 is accepted but ignored.
`AT S <r> = <n>`	Set S-Register - Stores the value <n> into the S-register <r>. The ISDN Port driver has only one register: **Reg.** **Description** 0 Auto answer n = 0: Disables auto answer. Incoming calls are indicated by a RING. 0< n < 255: Enables auto answer. n = 255: Ignores all incoming calls.

Command	Description
`AT Q [<n>]`	Result codes - Sets whether the modem driver returns or suppresses result codes. n = 0: Returns result codes n > 0: Suppresses result codes
`AT V [<n>]`	n = 0: Numeric result codes n > 0: Plain text result codes
`AT Z [<n>]`	Soft Reset - Resets the modem and restores the predefined modem configuration profile <n>. See AT&F[<n>] below for the list of predefined modem driver configurations.
`AT &C [<n>]`	Ignored for compatibility.
`AT &D [<n>]`	Ignored for compatibility.
`AT &F [<n>]`	Factory Setting - Resets the modem and restores the predefined modem configuration profile <n>. n = 0: Undefined protocol E1 V1 Q0 S0=255 +iM0 +iP0 +iS0/0 n = 1: Data, X75 E1 V1 Q0 S0=255 +iM1 +iP1 +iS7/0 n = 2: Data, V110-sync E1 V1 Q0 S0=255 +iM1 +iP2 +iS7/0 n = 3: Data, V110-async E1 V1 Q0 S0=255 +iM1 +iP3 +iS7/0 n = 4: Data, analogue-sync E1 V1 Q0 S0=255 +iM1 +iP4 +iS1/2 n = 5: Data, analogue-async E1 V1 Q0 S0=255 +iM1 +iP5 +iS1/2 n = 6: Data, V120 E1 V1 Q0 S0=255 +iM1 +iP6 +iS7/0 n = 7: Data, V120, 56k E1 V1 Q0 S0=255 +iM1 +iP7 +iS7/170 +iB9 n = 8: Voice E1 V1 Q0 S0=255 +iM3 +iP8 +iS1/0 n = 9: RNA, HDLC framing E0 V0 Q0 S0=255 +iM4 +iP9 +iS7/0 n =10: RNA, 56k E0 V0 Q0 S0=255 +iM4 +iP9 +iS7/170 +iB9 n =11: BTX, (T.70) E1 V1 Q0 S0=255 +iM1 +iP10+iS7/0 n =13: Group 3 Fax (T.30) E1 V1 Q0 S0=255 +iM2 +iP7+iS1/2
`AT &V [<n>]`	Displays the current configuration of the modem driver and the last number that has been dialed. n != 0: Lists also all predefined profiles

Command	Description
`AT \T <n>`	Inactivity Timeout - The modem driver releases the connection if there was no data traffic for <n> times 10 seconds. n = 0: Disables inactivity timeout n > 0: Disconnects after n * 10 seconds idle time
`AT \D <n>`	Debug Level - Specifies the kind of events that should be reported by the driver. You can view the messages with the help of the DITRACE Event Logger application. <n> is interpreted as a bit mask as follows: Bit 0: Error messages Bit 1: Connection related events Bit 2: PPP control protocol frames Bit 3: Read / write requests directed to DiPort.vxd Bit 4: Function calls Bit 5: Notifications sent by DiPort.vxd Bit 6: Full B-channel data trace Bit 7: Parameters Set the related bit to '1' for every kind of message you want to see in the log. Default: n = 3 (Errors and connection events)

Supported AT commands for fax

The Diva for Windows 98/Me and Windows 2000/XP modem driver is capable of working as a Class 2 fax modem. It supports all standard AT+F commands. The following list only contains those AT+F commands that are useful in manual mode.

Command	Description
`AT +FCLASS?`	Queries the configured modem class. 0 = Data Mode 1 = EIA Class 1 2 = EIA Class 2
`AT +FCLASS=?`	Displays all supported modem classes.
`AT +FCLASS=<n>`	Configures the modem for modem class <n>.
`AT +FMFR?`	Returns the name of the modem manufacturer.1)
`AT +FMDL?`	Returns the name of the modem model.1)
`AT +FREV?`	Returns the product version.1)

1) The softmodem does not accept this command.

ISDN-specific AT commands1)

The standardized AT command set is not able to meet all requirements necessary for ISDN connections. Therefore, the Diva for Windows 98/Me and 2000/XP modem drivers implement a series of additional ISDN-specific modem commands. They all begin with AT+i.

Command	Description
`AT +iM <n>`	Working Mode - Sets the working mode of the modem. n = 0: Undefined n = 1: Data Modem n = 2: FAX Modem n = 3: Voice Modem n = 4: RNA Modem (Enables frame conversion for RNA networking) n = 5: BTX Modem (Enables frame conversion for modem based BTX decoders) n = 6: Frame Mode - Keeps frame boundaries of the ISDN data frames
`AT +iP <n>`	B-channel Protocol. n = 0: Undefined n = 1: X.75 n = 2: V.110 synchronous n = 3: V.110 asynchronous n = 4: Analog Modem synchronous n = 5: Analog Modem asynchronous n = 6: V.120 n = 7: T.30 (FAX) n = 8: Voice n = 9: HDLC Framing (for PPP connections over ISDN) n =10: T.70 (BTX)
`AT +iS <x/y>`	Service Indicator/Additional Service Indicator. It tells the remote site which kind of connection you want to establish. Command affects the Low-Layer Capabilities (LLC) element on the SETUP message. x: Service Indicator y: Additional Service Indicator x/y = 1/1 ISDN Voice call 3.1 kHz x/y = 1/2 Analog Voice call x/y = 1/3 ISDN Voice call 7 kHz x/y = 2/1 FAX Group 2 x/y = 2/2 FAX Group 3 x/y = 2/3 Data over modem connection x/y = 2/4 BTX over modem connection x/y = 7/0 64 kbps Data x/y = 7/170 56 kbps Data x/y = 7/197 V.110 Rate Adaptation

Command	Description
`AT +iN <x/y>`	Numbering Plane Identifier. x: Identification for the local phone number y: Identification for the remote phone number **Note:** The modem driver applies default numbering plane identifiers that need not be changed.
`AT +iO <Number>`	Origination Address - The modem driver places this number as origination address in every outgoing call it issues.
`AT +iA <Number>`	Accepted Address - The modem driver only accepts incoming calls if the called party number equals the phone number configured here. If you do not specify a number, the modem driver accepts every incoming call.
`AT +iF <n>`	RNA-Framing (applies only to the RNA mode). n = 0: No Framing check n = 1: Forces synchronous conversation n = 2: Forces asynchronous conversation n = 3: Detects necessary conversation by analyzing incoming data packets.
`AT +iB <n>`	B-channel Data Rate. n = 0: Not Supported n = 1: Not Supported n = 2: Not Supported n = 3: Not Supported n = 4: 4800 bps n = 5: 9600 bps n = 6: 19200 bps n = 7: 38400 bps n = 8: 48000 bps n = 9: 56000 bps n > 9: 64000 bps (default) **Note:** The data transfer rates identified by n = 0 through n = 8 are only available when using the B-channel protocol V.110. The transfer rate identified by n = 9 is applicable to all digital data connections. n = 9 is required for ISDN connections that pass certain regions of the USA where some telephone switching equipment only supports 56 kbps per B-channel.
`AT +iH [<n>]`	Windows Hyperterminal-specific settings. n = 0: OFF n > 0: ON This option avoids some problems that might occur if you use the Windows Hyperterminal with the modem driver.
`AT +iC <n>`	Mode after data connection. n = 0: data mode n = 1: command mode
`AT + iD <n>`	Delay of AT-responses. n = 0: no delay n = 1 to 255: delay in milliseconds

Command	Description
`AT + iL <n>`	Maximum length of transparent data blocks. n = 0: use default n = 1 to 2048: maximum length of transparent data blocks
`AT +iZ [<n>]`	Maximum frame size in frame-oriented protocols. n = 0: use protocol- ‘specific’ maximum n = 1 to 2048: maximum send frame This value is set to 80 by the `AT + IH1` command.

1) The softmodem does not accept ISDN-specific ATcommands.

CHAPTER 6

Diagnostic and Security Tools

Diva Client for Windows 98/Me and 2000/XP provides several diagnostic and security tools that allow you to monitor your calls and protect you against undesired calls.

This chapter describes the following diagnostic and security tools:

- Diva Call Log below
- Diva Diagnostic Log on page 30
- Diva ISDN Monitor on page 30
- Diva ISDN CallGuard on page 32
- Call Bumping on page 37

Note: The sections only give you an overview of the tools. For detailed information, refer to the online help.

Note: Call Bumping is only available in German and English installations.

Diva Call Log

The Diva Call Log displays all calls made and received by the Diva Client adapter. This section describes how:

- To open the Diva Call Log below
- To configure the Diva Call Log on page 29
- To delete calls after a certain period of time on page 30

To open the Diva Call Log

To open the Diva Call Log, do the following:

Click ‘Start > Programs > Diva > Diva Assistant > Call Log’.

The Diva Call Log displays the following information for each call:

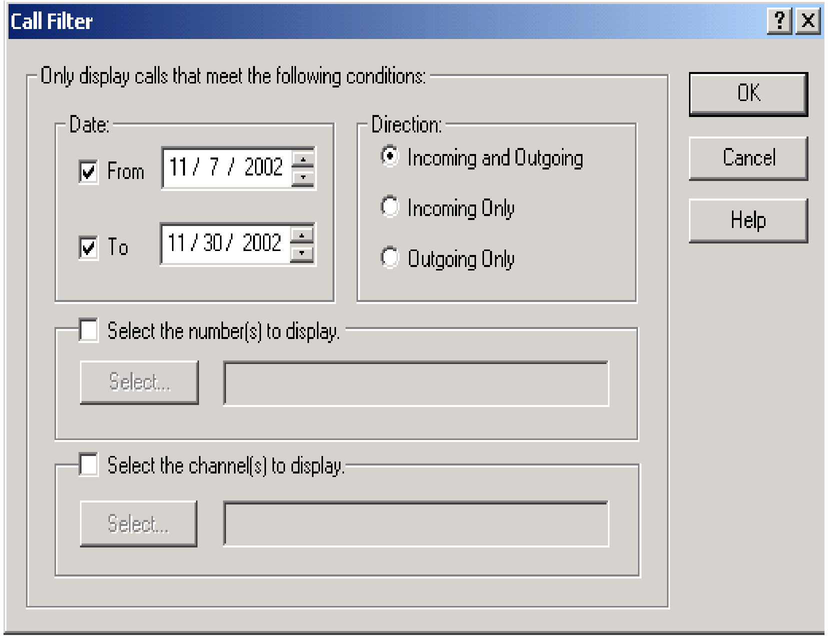
Channel:	displays on which B-channel the call was made.
Direction:	displays whether the call was outgoing or incoming.
Number:	displays the dialed number.
Start:	displays the date and the time the call started.

Finish:	displays the date and the time the call was finished.
Duration:	displays the duration of the call.
Disconnect Reason:	displays why the call was disconnected.

You can configure the Diva Call Log, so that it displays the calls depending on the date or the direction.

To configure the Diva Call Log

1. Click ‘Start > Programs > Diva > Diva Assistant > Call Log’.
2. Click on the ‘Filter’ icon.



Call Filter

Only display calls that meet the following conditions:

Date:
☑ From 11 / 7 / 2002
☑ To 11 / 30 / 2002

Direction:
● Incoming and Outgoing
○ Incoming Only
○ Outgoing Only

☐ Select the number(s) to display.

☐ Select the channel(s) to display.

- In the ‘Date’ dialog box, select ‘From’ and ‘To’ and type the period of time to display calls within a certain period of time.
- In the ‘Direction’ dialog box, select ‘Incoming and Outgoing’, ‘Incoming Only’, or ‘Outgoing Only’, depending on which calls should be displayed.
- In ‘Select the number(s) to display’ dialog box, select the number(s) that should appear in the Diva Call Log.
- In ‘Select the channel(s) to display’ dialog box, select the B-channel whose calls should be displayed.
- Click ‘OK’.

To delete calls after a certain period of time

1. Click ‘Start > Programs > Diva > Diva Assistant > Call Log’.
2. Click ‘Log > File’.
3. In the ‘Active Log File Details’ dialog box, select ‘Delete calls older than ... day(s)’.
4. Type the days after which the calls should be deleted.

   Note: A log file with 100 calls has a size of approximately 1,6 MB. It is recommended to set the amount of days low in order to save memory capacity.
5. Click ‘OK’.

Diva Diagnostic Log

The Diva Diagnostic Log displays messages sent by the Diva Client adapter. There are different messages sent by the Diva Client adapter indicating what is happening on the device. These messages contain information about the functioning of the Diva Client adapter and are therefore helpful to fix a problem.

To open Diva Diagnostic Log:

Click ‘Start > Programs > Diva > Diva Assistant > Diva Diagnostic Log’.

Double-click on a message to launch the Help Wizard. It explains the message and, if necessary, provides the steps to fix a problem.

Right-click on a message to open the ‘Message Help’ dialog box.

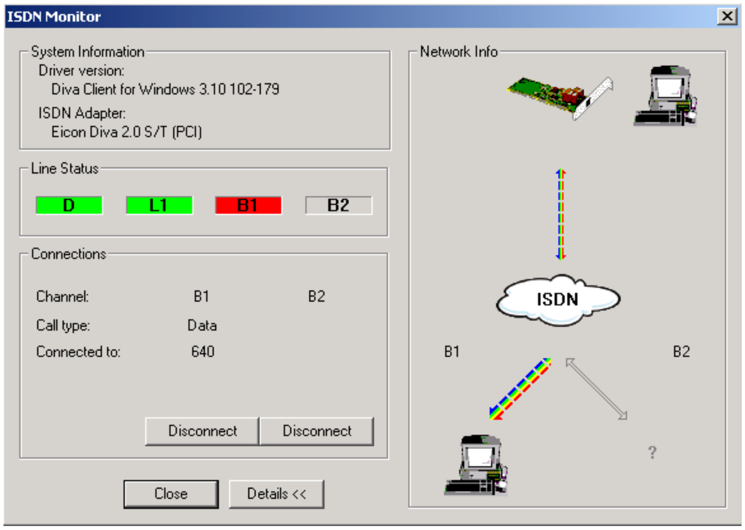
- Click on ‘Message Help’ to launch a troubleshooting guide that explains the messages sent by the Diva Client adapter.
- Click on ‘Details’ to open a dialog box with more details on the messages received.
- Click on ‘Copy’ to copy the selected message. You can copy a message and paste it into a mail for troubleshooting purpose.

Diva ISDN Monitor

With the ISDN Monitor you can see the status of the ISDN connection as well as the status of your Diva Client adapter.

To open Diva ISDN Monitor:

Click ‘Start > Programs > Diva > Diva Assistant > ISDN Monitor’.



System Information

Driver version:
Diva Client for Windows 3.10 102-179

ISDN Adapter:
Eicon Diva 2.0 S/T (PCI)

Line Status

🟩 D 🟩 L1 🟥 B1 B2

Connections

Channel:	B1	B2
Call type:	Data	
Connected to:	640	

The Diva Monitor displays:

- Line Status
- Connections
- Details

Line Status

The different colors in the ‘Line Status’ dialog box have the following meaning:

Channel	Status	Description
D-channel	grey	The D-channel is not active.
	green	The D-channel is active.
Layer 1	grey	Layer1 is not active.
	green	Layer 1 is active.
B-channels ‘B1’ & ‘B2’	green	There is no connection. The B-channel is free.
	red	There is a connection. The B-channel is occupied.

Connections

The ‘Connections’ dialog box displays the call type, i.e. a telephone call, of the corresponding B-channel and the number you dialed.

Click on ‘Disconnect’ to finish a call.

Details

Click on ‘Details’ to open or close the graphic view of the connection.

Diva ISDN CallGuard

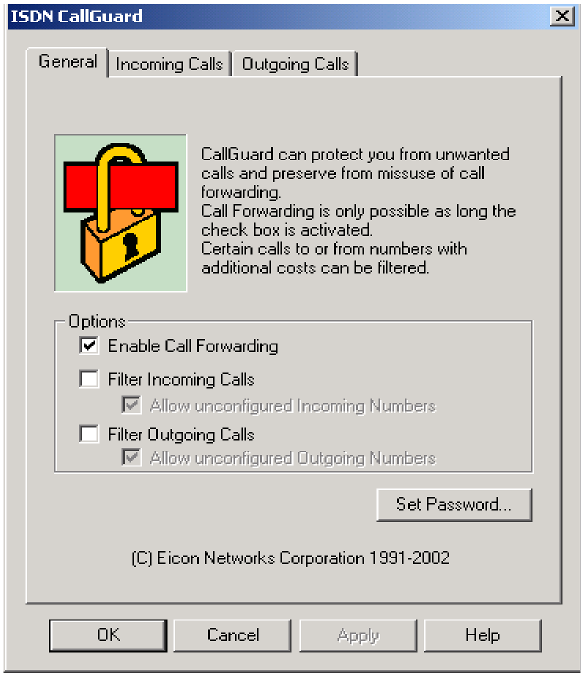
The Diva ISDN CallGuard monitors all connections made and allows settings to refuse connection to predefined numbers. This section describes how:

- To open the Diva ISDN CallGuard below
- To configure the Diva ISDN CallGuard on page 33
    - To configure General settings on page 33
    - To configure Incoming Calls on page 34
    - To configure Outgoing Calls on page 36

To open the Diva ISDN CallGuard

1. Click ‘Start > Programs > Diva > Diva Assistant > ISDN CallGuard’.
2. If you open the Diva ISDN CallGuard for the first time, you can enter a password and confirm it in the ‘Password’ dialog box.
3. Click ‘OK’.

    Note: If you forget the password, you need to uninstall Diva Client for Windows as described in Uninstalling Diva Client for Windows on page 39 and reinstall it as described in Installing Diva Client for Windows 98/Me and 2000/XP on page 10.



CallGuard can protect you from unwanted calls and preserve from missuse of call forwarding.
Call Forwarding is only possible as long the check box is activated.
Certain calls to or from numbers with additional costs can be filtered.

Options
☑ Enable Call Forwarding
☐ Filter Incoming Calls
  ☑ Allow unconfigured Incoming Numbers
☐ Filter Outgoing Calls
  ☑ Allow unconfigured Outgoing Numbers

(C) Eicon Networks Corporation 1991-2002

To configure the Diva ISDN CallGuard

To configure General settings

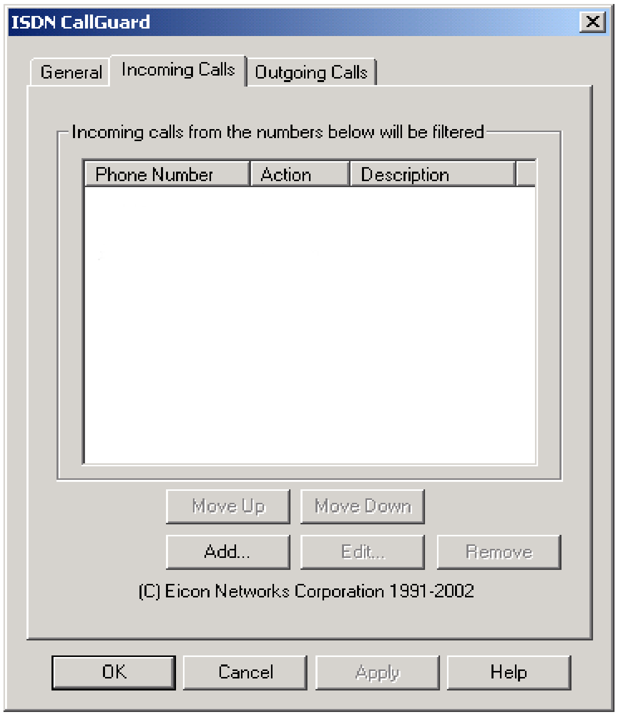
1. Click ‘Start > Programs > Diva > Diva Assistant > ISDN CallGuard’.
2. In the ‘ISDN CallGuard’ dialog box, click the ‘General’ tab.
3. In ‘Options’ select the security options, you wish to use.

- Deselect ‘Enable Call Filtering’, if calls should not be filtered.
- Select ‘Filter Incoming Calls’, if you wish to block or allow certain incoming calls.
- The option ‘Allow unconfigurated Incoming Numbers’ is enabled by default to allow numbers that are not specified within the filtering call list. Deselect it, if unconfigurated numbers should not be allowed.
- Select ‘Filter Outgoing Calls’, if you wish to block or allow certain outgoing calls.
- The option ‘Allow unconfigurated Outgoing Numbers’ is enabled by default to allow numbers that are not specified within the filtering call list. Deselect it, if unconfigurated numbers should not be allowed.

To configure Incoming Calls

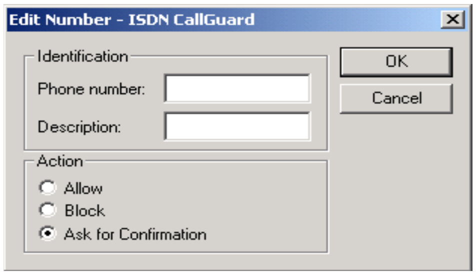
1. Click ‘Start > Programs > Diva > Diva Assistant > ISDN CallGuard’.

2. In the ‘ISDN CallGuard’ dialog box, click the ‘Incoming Calls’ tab.



3. Click ‘Add’ to add phone numbers to be filtered.

4. The ‘Edit Number - ISDN CallGuard’ dialog box appears.



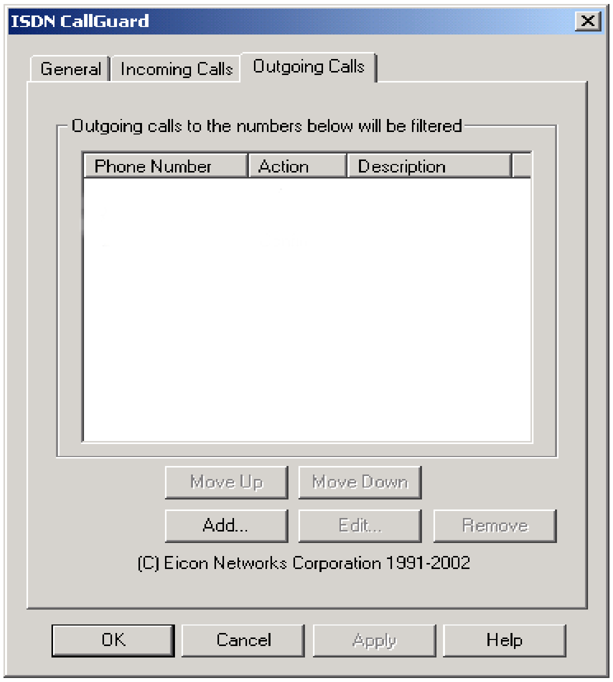
○ Allow
○ Block
● Ask for Confirmation

- Enter the phone number which should be filtered without the first 0.
- If a group of numbers should be filtered, enter the digits that apply to all numbers of the group with a * at the end as substitute symbol.
- Select, if the number should be allowed, blocked, or if a confirmation should be requested.
- Click ‘OK’.
- The filtered number is shown in the ‘Incoming Calls’ dialog box.
- To increase the priority of a number, select it and click on the ‘Move Up‘ tab. (The first number on the list has the highest priority.)
- To decrease the priority of a number, select it and click on the ‘Move Down’ tab.

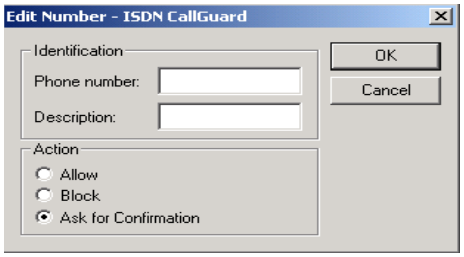
5. Click ‘Apply’, and then ‘OK’.

To configure Outgoing Calls

1. In the ‘ISDN CallGuard’ dialog box, click the ‘Outgoing Calls’ tab.



2. Click ‘Add’ to add phone numbers to be filtered.
3. The ‘Edit Number - ISDN CallGuard’ dialog box appears.



Action
○ Allow
○ Block
● Ask for Confirmation

- Enter the phone number that should be filtered without the first 0.
- If a group of numbers should be filtered, enter the digits that apply to all numbers of the group with a ‘*’ at the end as substitute symbol.
- Select, if the number should be allowed, blocked, or if a confirmation should be requested.
- Click ‘OK’.
- The filtered number is shown in the ‘Outgoing Calls’ dialog box.
- To increase the priority of a number, select it and click on the ‘Move Up‘ tab. (The first number on the list has the highest priority.)
- To decrease the priority of a number, select it and click on the ‘Move Down’ tab.

4. Click ‘Apply’, and then ‘OK’.

Call Bumping

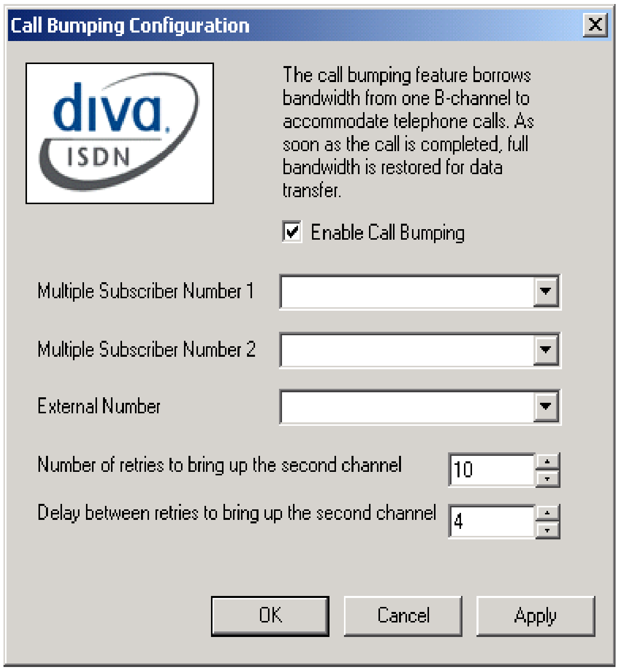
Call Bumping allows telephone calls to be received, even when both B-channels are in use by a data call. Upon detection of an incoming voice call, one of the B-channels is released, and becomes available to the voice call. The data call continues at diminished capacity for the duration of the voice call. When the voice call is completed, the B-channel will once again be assigned to the data call, doubling the speed of the connection. Alternatively, incoming voice calls can be forwarded to an external number, without interrupting the data call.

Note: Call Bumping is only available if the IDSN switch supports Call Deflection.

To open Call Bumping

1. Right-click on the Diva Monitor Tool icon in the System Tray.

2. Select ‘Call Bumping’ from the pop-up menu.



Call Bumping Configuration

The call bumping feature borrows bandwidth from one B-channel to accommodate telephone calls. As soon as the call is completed, full bandwidth is restored for data transfer.

☑ Enable Call Bumping

Multiple Subscriber Number 1

Multiple Subscriber Number 2

External Number

Number of retries to bring up the second channel: 10

Delay between retries to bring up the second channel: 4

To configure Call Bumping

1. From the ‘Call Bumping Configuration’ screen, select ‘Enable Call Bumping’.
2. In ‘Multiple Subscriber Number 1’, type the number to which incoming calls will trigger Call Bumping.
3. In ‘Multiple Subscriber Number 2’, type the number to which incoming calls will trigger Call Bumping.
4. In ‘External Number’, type the number to which incoming voice calls will be forwarded if no B-channel is available.
5. In ‘Number of retries to bring up the second channel’, type the amount of times that Call Bumping will try to reassign a bumped B-channel to the data call to which it originally belonged.
6. In ‘Delay between retries to bring up the second channel’, type how long Call Bumping will wait between attempts to regain the bumped B-channel.
7. Click ‘Apply’, and then ‘OK’.

CHAPTER 7

Uninstalling Diva Client for Windows

Diva Client for Windows 98/Me and 2000/XP includes an Uninstall program that removes the Diva Client for Windows software from your computer. Run the Uninstall utility as follows:

- Uninstalling Diva Client for Windows 98/Me below
- Uninstalling Diva Client for Windows 2000/XP below

Uninstalling Diva Client for Windows 98/Me

Diva Client for Windows 98/Me includes an uninstallation program that removes the Diva software from your computer.

1. Run the Uninstall utility by choosing ‘Start > Programs > Diva > Uninstall’.
2. If you are planning to reinstall Diva Client for Windows Me, you can select ‘Keep Configuration Parameters’. This option will preserve your ISDN settings so that you will not have to re-enter them when you install Diva Client for Windows again.
3. The uninstall process is completely automatic. Click ‘Uninstall’ to begin.

Note: If you are facing problems uninstalling the Diva Client for Windows software from your computer with the Uninstall utility, remove it with the Diclean utility as described in Uninstalling the Diva software with Diclean on page 50.

Uninstalling Diva Client for Windows 2000/XP

1. Click ‘Start > Programs > Diva’.
2. Click ‘Uninstall’.
3. Click ‘OK’ to begin the uninstallation.

Note: If you are facing problems uninstalling the Diva Client for Windows software from your computer with the Uninstall utility, remove it with the Undiva utility as described in Uninstalling the Diva software with Undiva on page 51.

CHAPTER 8

Troubleshooting

This chapter describes how to troubleshoot your Diva Client adapter or ISDN connection as follows:

- Using the Line Check utility below
- Identifying hardware conflicts under Windows Me on page 41
- Resolving hardware conflicts under Windows Me on page 41
- IPX access to CISCO routers on page 42
- Using DiTrace on page 42
- Analyzing traces on page 43
- Advanced trace analysis on page 46
- Suggested strategies to find ISDN problems in traces on page 49
- Uninstalling the Diva software with Diclean on page 50
- Uninstalling the Diva software with Undiva on page 51

Using the Line Check utility

Diva Client for Windows includes a utility to quickly verify that your Diva Client adapter and ISDN line are working correctly. This utility is called Line Check.

To use the Line Check utility, you must have installed your Diva Client adapter, installed Diva Client for Windows 2000/XP, and connected your ISDN line to the Diva Client adapter.

1. Run Line Check by clicking ‘Start > Programs > Diva > Line Check’.

   The ‘Line Check’ dialog box appears.
2. Click ‘Start’ to begin the check.

   If the Line Check Utility reports an error, verify that:
   - Your cabling is connected correctly.
   - Your ISDN switch type, network type, ISDN numbers and SPIDs1) are correct.
   - Your Diva Client adapter is not conflicting with any other hardware.
   - Your phone company is not experiencing any problems.

1) SPIDs only in North America.

If the Line Check does not return an error, and you cannot get your Diva Client adapter to work properly, there is probably a problem in the configuration of the application you are using with your adapter (such as Dial-Up Networking or faxing software). Contact your software vendor for further assistance.

Identifying hardware conflicts under Windows Me

While all Diva Client adapters are fully Plug&Play compliant, the complex and congested configurations of many of today's computers can lead to problems involving conflicts between installed devices.

If you see the symbol with the message ‘Unknown device’ in the Device Manager, this entry should be removed. Such an entry usually indicates that hardware was installed without its software being properly installed. This can prevent the Plug&Play component from correctly detecting and identifying the Diva Client adapter.

If you see the symbol next to the entry for your Diva Client adapter, or any other adapter in the Windows Me Device Manager, the problem may be a hardware resource conflict. Refer to the next section Resolving hardware conflicts under Windows Me below for more information.

The following procedure describes how to identify hardware conflicts.

After your computer has rebooted, open the Windows Me Device Manager as follows:

1. Right-click ‘My Computer’.
2. Select ‘Properties’.
3. Click the ‘Device Manager’ tab.
4. Click on the ‘+’ next to Network adapters to expand the tree.
5. Select the Diva Client adapter you have installed and click ‘Properties’.

Under ‘Device status’ you should see the message:

```
This device is working properly.
```

If there is a warning message instead and/or the warning symbol, the Diva Client adapter has a problem. Refer to the next section, ‘Resolving hardware conflicts under Windows Me’ for more information.

Resolving hardware conflicts under Windows Me

Many new computers have several built-in devices such as IRDA ports and sound cards which use up hardware resources. If two devices conflict with each other, you may have to disable one in the Windows Me Device Manager. You can use the ‘Hardware profiles’ feature of Windows Me to disable one device while another is in use.

For example: Suppose a Plug & Play Diva Client adapter is in conflict with a sound card. In most cases, Soundblaster-compatible cards use an I/O address of 200H as a default value. If Windows Me assigns 200H to both the Diva Client adapter and the sound card, you should change the I/O address manually to an unused value (such as: 240H).

If you still have a problem getting the Diva Client adapter to work, or if you cannot find free resources to configure the adapter, remove any other unused adapters in your computer. When the Diva Client adapter is working, try reinstalling the other device and finding a compatible combination of configuration parameters.

Alternatively, the problem may be linked to the software; the ISDN drivers may not be installed correctly. To fix this problem, remove the ISDN drivers as described in Uninstalling Diva Client for Windows on page 39 and then reinstall the ISDN drivers. Install Diva Client for Windows 98/Me and 2000/XP as described in Installing Diva Client for Windows 98/Me and 2000/XP on page 10.

IPX access to CISCO routers

To provide IPX access to CISCO routers with your Diva Client adapter (especially with older firmware versions) you must specify a fixed IPX node address for your computer in the Windows registry.

Create a binary registry value name in

```
\\HKeyLocalMachine\System\CurrentControlSet\Services\VxD\PPP
```

with the name ‘IPXNodeNumber’. Be sure to include six bytes for the local IPX node address. This process creates the default node address. If the server replies with a NAK message and a different address, follow the server's request.

When negotiating IPX, PPP checks the new entry in the registry every time it attempts a new connection, without requiring a restart.

Using DiTrace

If reinstalling both the hardware and software does not fix the problem you are experiencing, you may have to examine the operations of the Diva client adapter in detail.

Eicon provides a utility called DiTrace which creates a record of the internal processing of your Diva client adapter. This record is called a trace. When DiTrace runs, it saves the trace as a text file on your hard disk.

Analyzing trace files requires some detailed understanding of how computers and ISDN work. If you are not comfortable with adjusting the inner workings of your computer, you may wish to contact Eicon Networks Customer Services. You can contact Customer Services via our homepage: www.eicon.com.

Here is the recommended procedure for recording a trace that you are going to analyze:

1. Restart your computer. This ensures that:
    - Any configuration changes you have made are in effect.
    - The trace buffer is empty and not filled with previous activity.
    - The Diva Client adapter initialization trace is at the beginning of the DiTrace buffer and has not been overwritten.
2. Perform the action or establish the connection causing the problem one time only (so that the trace is not filled with repeated information).
3. Perform the trace immediately and save the output into a text file:
    - Run DiTrace from 'Start > Programs > Diva > Diagnosis (DiTrace)'.
    - The output will be displayed in the Windows Notepad (or the program you have configured to edit .txt files) .
4. Save the file.

Analyzing traces

This section discusses frequently asked questions about analysing traces.

1. Is the Diva client adapter working?

Use the search facility of the text editor to look for a line like this:

```
17:12:16.093 L 1 DIDiva: IO-address=0x110 Interrupt=7
(address2=0x0)
```

If you do not see a line like this, you might have a device conflict in your machine. Use the Windows Device Manager to find the Diva client adapter (under Network adapters) and check for conflicts with other hardware devices in the machine. If many devices are installed on your computer (for example: multiple COM ports, CD-ROM, sound card, SCSI) you might find that there are no free hardware interrupts that the Diva client adapter can use.

If you do find the DIDiva line above, it is a good sign. Scroll down the file to find messages that look like this:

```
17:12:19.311 - D-R(008) FE FF 03 0F 00 00 04 FF
17:12:19.311 - D-X(008) FC FF 03 0F EC 3E 05 81
```

The 'D-R' and 'D-X' show received and transmitted frames, and both will be present in the trace if the ISDN interface and the Diva client adapter are both working. These messages represent activity over the D-channel (signaling channel), which is used to set-up (make calls) and take down (hang-up) all B-channel connections (voice, fax or data calls).

2. Why are calls failing?

If calls are failing, there might be a problem with the ISDN activation. After attempting a call with Dial-Up Networking, run DiTrace again and look for a message like this:

```
17:34:32.524 - EVENT: Call failed in State 'Call initiated'
Link disconnected, Layer-1 error (cable or NT)
```

If you see one of these messages, it either means that the Diva client adapter is not working correctly (in which case, go back to step 1), or that the cable between the Diva client adapter and the ISDN NT1 box (or your ISDN jack, if you do not use an NT1) is not connected or is faulty. If you are calling through a PABX port, check with your system administrator if the connection is properly configured and cabled for ISDN use, not for an analog telephone.

3. Is the ISDN to blame?

If you suspect that the ISDN is causing the problem, DiTrace can be used to gather more information. When a call goes out, you can see a SETUP entry like this:

```
17:30:58.482 - SIG-X(026) 08 01 01 05 A1 04 02 88 90 18 01
83 6C 06 00 80 32 35 30 30 70 04 80 37 30 30
Q.931 CR0001 SETUP
MORE
Bearer Capability 88 90
Channel Id 83
Calling Party Number 00 80 '2500'
Called Party Number 80 '700'
```

This is the message that flows over the D-channel and asks the network to set up an ISDN connection. Later in the trace, you can see if the call is connected (a CONN event) or if it is disconnected (refused) by a DISC event.

The CONN event looks like this:

```
17:30:34.227 - SIG-R(004) 08 01 81 07
Q.931 CR8001 CONN
```

The DISC event looks like this:

```
17:30:58.589 - SIG-R(008) 08 01 81 45 08 02 81 D8
Q.931 CR8001 DISC
Cause 81 d8 'Incompatible destination'
```

In addition to the diagnostic codes, the DiTrace program provides an explanation in English. The message ‘Incompatible Destination’ is often seen when digital ISDN devices try to place a call to analog telephones (or modems): the network detects the incompatibility between the digital and the analog devices and refuses to deliver the call to the remote device.

The Diva client adapter ensures that whenever an analog modem, fax or POTS call is made, the bearer capabilities reflect the analog nature of the call; these calls will only be accepted by analog devices across the network.

Another disconnect example looks like this:

```
17:30:58.589 - SIG-R(026) 08 01 81 45 08 02 80 91 28 10 2A
41 41 2A 4E 55 4D 42 45 52 20 42 55 53 59 23
Q.931 CR0001 DISC
Cause 80 91 'Number Busy'
Display 2a 41 41 2a ….. 23 "*AA* NUMBER BUSY#"
```

Here the call was refused because all the B-channels were already in use at the ISP.

Note: Some networks add a Display element to the DISC message and the cause codes. This gives additional information as to why the call was refused, although not in this case.

By using DiTrace, it should be possible to quickly determine whether the ISDN call was connected or not. If the call failed, some basic diagnostic information can be found to determine whether the problem is in the network, or is due to user error.

4. Is it a PPP problem (if you are using ‘Eicon Channel 0/1’)?

The DiTrace also shows PPP messages flowing on the B-channel and tries to decode some of the messages. A description of PPP is beyond the scope of this document, but you should be able to see whether PPP frames are flowing in both directions. PPP messages look like this:

```
17:30:38.298 - B1-R(033) 33 bytes
LCP : id 1, len 29 ==> Configure-Request
- Maximum-Receive-Unit 1524
- Authentication-Protocol ==> PAP
- Quality-Protocol 0xC025
- Multilink-Endpoint-Discriminator
-- IEEE 802.1 MAC Addr 00.C0.7B.60.BD.F0
0x0000 FF 03 C0 21 01 01 00 1D 01 04 05 F4 03 04 C0 23
..@!.......t..@#
0x0010 04 08 C0 25 00 00 02 58 13 09 03 00 C0 7B 60 BD
..@%...X....@{`=
```

The ‘B1-R’ at the start of the message shows that it is a B-channel packet and that it is being received on B-channel 1 (remember there are two B-channels on an ISDN Basic Rate Interface). You will also see ‘B1-X’ for transmitted frames.

If frames are being transmitted and received over the B-channel, it is a good sign and indicates that you are connected. If no frames are received on the B-channel, this may be because you are not connected to a PPP service, or because the point-of-presence of the ISP has failed in some way.

The PPP frames generally start with FF 03 (see the un-decoded part of the message above), so if you are receiving something other than this from the other end, you are probably connected to a non-PPP device. Remember, some ISPs use X.75 or V.120 to carry Internet traffic over ISDN - check with your ISP.

Advanced trace analysis

DiTrace messages all start with a time stamp ‘hh:mm:ss.ms’ where hh=hours, mm=minutes, ss=seconds, ms=milliseconds. This is usually followed by a ‘-’ field and by the type of event being traced. The most useful types of messages are listed below.

Message type	**Meaning**
DIDiva	This message reports the I/O address and Interrupt (IRQ) used by the Diva client adapter.
SIG-EVENT	Examples: SIG-EVENT FFFA 00 Layer 2 OK SIG-EVENT FFFF 08 Layer 1 problem SIG-EVENT FFFF 09 Layer 2 problem (TEI assignment) SIG-EVENT FFFF 0A Layer 2 problem The SIG-EVENT FFFF messages indicate a low-level problem, usually linked to cabling or to the Diva client adapter not successfully communicating with the NT1 or the switch. This message can also be caused by a faulty driver configuration.
D-X D-R	D-channel messages (uninterpreted), complete with LAPD and Q.931 headers. D-X = transmitted by the Diva client adapter; D-R = received by the Diva client adapter.
B-X B-R	B-channel messages. The B-channel messages are not always truncated at 28 bytes now, but can contain quite large packets. If the content is PPP, some decoding and interpretation is done.
SIG-X SIG-R	These are basically signalling (D-channel) messages, but come from a higher layer in the Diva code, and have some interpretation of the data, for example: call SETUPs have all the information elements decoded so you do not need to do it manually. These are the most interesting messages if you are quickly scanning through the trace looking for a problem.
CAPI20_GET CAPI20_PUT	These are the CAPI_GET_MESSAGE and CAPI_PUT_MESSAGE operations from a CAPI 2.0 application using the Diva client adapter. Some of the values are broken-out from the CAPI message structure, and the actual CAPI message type is decoded (for example: LISTEN_REQ, INFO_IND, DATA_B3). The first few bytes of the message (if any) are decoded on the line below.
EVENT	These messages often amplify failed operations on the Diva client adapter, so they are a good source of information.

Message type	Meaning
atCmd	The ‘atCmd’ shows strings being sent via the COM-port interface into the Diva client adapter. If you are using pre-TAPI applications, these messages are interesting as they show the way the application is trying to initialize the Diva client adapter. For example if you are using the Eicon Fax Modem device you will see the ‘AT+F’ commands when the fax application exchanges with the Diva client adapter.
atRsp	Again for pre-TAPI devices, this shows the ‘AT’ responses from the Diva client adapter to an application using the COM port.

You can often tell a lot about the mode of failure by only looking at the SIG-X and SIG-R messages. Look out for these messages:

SIG Message	Meaning
SETUP	This is an attempt to establish a connection, and can be sent or received by the Diva client adapter. This message contains the bearer capabilities, describing the type of the call.
CALL_PROC	CALL PROCEEDING is an indication that the network is processing the call SETUP.
PROGRESS	These are messages from the network that provide information about the call attempt that is underway.
ALERT	ALERTING means that the ‘phone is ringing’ at the other end, that is, the call is being offered to devices at the number you specified in the SETUP.
STATUS	This is sometimes sent to identify an error condition. Make a note of any cause codes that accompany this message.
CONN	CONNECT means the call has been connected, that is, the B-channel is open and ready.
CONN_ACK	CONNECT ACKNOWLEDGE is sent in response to the CONNECT message.
DISC	DISCONNECT is sent to bring down an established connection, or refuse a call SETUP. Note down any cause codes that accompany this message.
REL	RELEASE is used to tidy up after a disconnect. There are some cases where it is an advantage to issue a RELEASE some seconds after the DISCONNECT (for example: when there is an announcement message on the B-channel that the user needs to hear).
REL_COM	RELEASE COMPLETE is the reply to RELEASE.

Some common types of bearer capabilities (present in the SIG-X SETUP message) are:

Bearer Capabilities	Application
88 90	64K unrestricted digital (that is, a data call)
88 90 21 BF	56K digital (applicable to North America only)
80 90 A3	Voice call (A-Law voice encoding)

Bearer Capabilities	**Application**
80 90 A2	Voice call (mu-Law voice encoding - applicable to North America)
90 90 A3	Fax Group 3

Suggested strategies to find ISDN problems in traces

Layer 1 and Layer 2 problems

1. Look for DIDiva, and check that you have a message that looks like this:

   ```
   15:00:20.064 T 1 DIDiva: IO-address=0x110, Interrupt=3
   ```

   If this message is missing, there is probably a hardware conflict.

   Note: This information is only in the DiTrace the first time after the Diva client adapter is activated (if you have a Diva Pro PC Card, you can generate the message again by removing the Diva client adapter and putting it back in again). You should also look for the following message, which always indicates a configuration problem:

   ```
   15:34:36.725 T 1 Interrupt test failed
   ```

2. Look for SIG-EVENT FFFF messages.

   This can also show low-level problems with the Diva client adapter. Look to see if there are any ‘D-X’ or ‘D-R’ messages; if there are not, the Diva client adapter is not communicating with the NT1 or the network.

3. Quickly scan through the trace and look for ‘EVENT’.

   This may show a local or network failure of some kind.

Layer 3 problems

1. Make sure there is a SIG-X containing ‘SETUP’.

   This indicates that a call is being made by the Diva client adapter. If there is no SETUP, perhaps the application never tried to call, or perhaps there is a layer 2 problem (see above).

2. Check if a SIG-R came in containing ‘CONN’.

   If the SETUP receives ‘CONN’ (CONNECT) as a response, then a B-channel was successfully connected. If the SETUP gets ‘DISCON’ (DISCONNECT) as a response, there is a problem with the network or with the equipment at the far end. A ‘DISCON’ normally has Q.931 cause codes to tell you what the problem is.

3. If the cause of a ‘DISCON’ is not obvious, check the SETUP message.

   Make sure that the ISDN numbers are correct, and also that the bearer capabilities look right.

4. If the ‘CONN’ event is received then look for ‘B-X’ and ‘B-R’ messages.

   If you can see one or more of these, the ISDN and connection are OK and you need to go on to the next stage.

Higher-level problems

1. If you see 'B-X' messages, but no 'B-R' messages, the Diva client adapter is sending data (for example: PPP frames), but the remote equipment is not responding. Perhaps the remote equipment is not using the same protocol on the B-channel?
2. If the 'B-X' and 'B-R' data starts with 'FF 03', this is PPP and the next logical step is to analyze the PPP to look for negotiation problems. For example, are both ends using the same protocol (such as IP, IPX, and NetBEUI), does the authentication (that is, PAP, CHAP) succeed?
3. All B-channel protocols (X.75, X.25, V.120, etc.) have their own activation sequence, so at this stage you need to start analyzing the B-channel data with protocol-specific tools. It is important to have some idea about what kind of protocols the equipment at the other end of the link supports.

   You can sometimes guess what the protocol is from the first frames sent and received. For example:

   - 'B-X' or 'B-R' frame contains 01 3F or 03 3F (SABM frame)
     This could be X.75 (LAPB) or it could be X.25 (which needs to activate LAPB first).
   - 'B-X' or 'B-R' frame contains 08 01 7F (SABME frame)
     This could be V.120 connection.

   Note: Note that sometimes other protocols are carried inside V.120 (PPP or asynch PPP for example).

   - 'B-X' or 'B-R' frame contains FF 03
     This is quite likely to be PPP.
   - 'B-X' or 'B-R' frame contains 7E FF 7D 23
     This is quite likely to be either Asynch PPP or V.110—check the bearer capabilities to determine which it is. V.110 will normally use bearer capabilities '88 90' (unrestricted digital), whereas asynch PPP will normally be transmitted across an analogue modem connection with bearer capabilities '90 90 A3'.

Uninstalling the Diva software with Diclean

If you are using Windows 98/Me, and you are facing problems during the installation or uninstallation of the Diva software you can remove it with the Diclean utility.

To use the Diclean utility, you must have inserted the Diva Client Software Suite CD-ROM in the CD-ROM drive.

1. Click 'Start > Run'.
2. In the 'Run' dialog box type:

   ```
   D:\win_9x\install\diclean.exe
   ```
3. Click 'OK'.

4. Restart the computer when promted.

   Diclean will remove the Diva software from your computer. If you want to reinstall the Diva software refer to Installing Diva Client for Windows 98/Me and 2000/XP on page 10.

Uninstalling the Diva software with Undiva

If you are using Windows 2000/XP, and you are facing problems during the installation or uninstallation of the Diva software you can remove it with the Undiva utility.

To use the Undiva utility, you must have inserted the Diva Client Software Suite CD-ROM in the CD-ROM drive.

1. Click ‘Start > Run’.
2. In the ‘Run’ dialog box type:

   ```
   D:\win_2K\install\undiva.exe
   ```
3. Click ‘OK’.
4. Restart the computer when promted.

   Undiva will remove the Diva software from your computer. If you want to reinstall the Diva software refer to Installing Diva Client for Windows 98/Me and 2000/XP on page 10.

APPENDIX A

Features

Each of Eicon's Diva client adapters provides different features and capabilities with Diva Client for Windows 98/Me and 2000/XP. The table below outlines the feature set of the following adapters:

- Diva USB and Diva 2.0x
- Diva Pro 2.0, Diva Pro 3.0, Diva Pro PC Card, and Diva Pro 3.0 PC Card

However, not all features are available on all the supported interfaces. The interfaces supported by Diva client adapters are as follows:

- **WAN Miniport:** Provides support for WAN protocols running over ISDN. Useful for connecting to Windows NT Remote Access Services (RAS).
- **COM port:** For applications that require communications via a standard computer communications port.
- **CAPI 2.0:** Common ISDN Application Programming Interface. A standard interface for applications to interact with Diva client adapters.

In the table below, a • indicates that the feature is supported.

Features via interface:	**WAN MiniPort**	**COM Port**	**CAPI 2.0**
B-channel related:			
Transparent HDLC	•	•	•
Transparent (Voice)			•
X.75	•	•	•
T.70/T.90 (T-Online)		•	•
V.110 (GSM)2)	•	•	•
V.120	•	•	•
V.34+, V.90 analog modem2)	•	•	•
V.42, V.42bis	•	•	•
X.75/V.42bis			•
Change of B-channel protocol during a call			•
X.25, X.31, ISO 8208 in the B-channel		•	•

Features via interface:	WAN MiniPort	COM Port	CAPI 2.0
Fax Group 4 (incl. T.90/ISO8208 and module mode detection)			•
T.30 Fax Group 3 (analog), Class 1 and 2		•	•
Fax with Error Correction Mode (ECM) Fax with MR (D2 coding) Fax with MMR (T.6 coding)		•	•
Fax 14.4 kbps (Softfax)[1)]		•	•
Fax 33.6 kbps (V.34) (Super G3 Fax) [2)]			•
Fax tone detection			•
Reversal of fax direction			•
Fax polling / fax on demand		•	•
DTMF tone detection and transmission			•
Supplementary Services:			
MSN (multiple subscriber number)	•	•	•
DDI (direct dialing-in)	•	•	•
SUB (sub-addressing)			•
CLIP (calling line identification presentation)		•	•
CLIR (calling line identification restriction)			•
COLP (connected line identification presentation)			•
COLR (connected line identification restriction)			•
KEY (keypad protocol)			•
TP (terminal portability)			•
Call forwarding unconditional			•
Call forwarding busy			•
Call forwarding no reply			•
Call deflection			•
CW (call waiting)			•
HOLD (hold and retrieve a call)			•
ECT (explicit call transfer)			•
AoC (advice of charge)			•
Three-party conference			•
Large conference			•

Features via interface:	**WAN MiniPort**	**COM Port**	**CAPI 2.0**
User-to-user signaling			•
Others:			
Transparent D-channel			•
X.25/D-channel			•

[1] only Diva USB and Diva 2.0x

[2] only Diva Pro adapters, and Diva Pro PC cards

APPENDIX B

Getting Help

If the troubleshooting procedures in this document do not resolve the problem, please contact Eicon Networks Support at our web address below.

World Wide Web

Information about Eicon Networks products and services -- including documentation and software updates -- is available at **www.eicon.com**.

Eicon's online Helpweb -- is available at **www.eicon.com/support**.

APPENDIX C

Glossary of ISDN Terms

The following table explains commonly used ISDN terms.

B-channel	Bearer channel. Carries the data on an ISDN line at 64 kbps.
Basic Rate Interface (BRI)	An ISDN line comprising two B-channels and one D-channel (2B+D).
D-channel	Carries the signaling information (dialing signals, busy signals, call setup and teardown, etc.). On a Basic Rate Interface, the D-channel transmits at 16 kbps. On a Primary Rate Interface, the D-channel transmits at 64 kbps. It can also be used for low-speed data.
ISDN	Integrated Services Digital Network. A digital telephone and telecommunications network for carrying voice, data, images, and video at high speed.
Node address	A unique numerical value associated with a specific node in a network. A node is any element with a network interface card (NIC) installed; it is generally a workstation or a server, but can also be a printer or a modem.
NT1 (Network Termination-1)	North America only. A device that connects your ISDN hardware to the ISDN wall jack (referred to as the U-interface). Some ISDN adapters have a NT1 already built into them.
Point-to-Point Protocol (PPP)	A protocol that allows a computer to use TCP/IP to connect to other computers over a standard phone line using a high-speed modem.
POTS	Plain Old Telephone Service: an analog (non-digital) telephone line.
Primary Rate Interface (PRI)	A high-capacity ISDN line. In North America and Japan, it comprises 23 B-channels at 64 kbs and one D-channel at 64 kbs (23B+D). In Europe, PRI comprises 30 B-channels and one D-channel (30B+D). See also: Basic Rate Interface.
RJ-11	The most common telephone jack in the world. This is a six-conductor modular jack with 4 wires. You probably have RJ-11 jacks in your house.
RJ-45	An 8-pin connector jack used with standard telephone lines, and required by some ISDN hardware. A little larger than an RJ-11 jack.

Service Profile Identifier (SPID)	A number or set of numbers assigned to your ISDN line by your phone company. In North America, one SPID is assigned to each channel. The switch uses SPIDs as unique identification numbers for each ISDN line, so it can determine where to send calls and signals.
S/T-Interface	The part of the ISDN line that connects to the computer or phone.
Switch type	The brand of equipment and software revision level that the telephone company uses to provide you with ISDN service. There are only a few types of switches in the world and usually just one in countries other than the United States.